Name: _____
School: _____
Score: _____

1. _____ What is the value of $< -23, 15, 16 > \cdot < 17, -4, 37 >$?
2. _____ How many zeroes are there in the base 7 representation of 3500!?
3. _____ What is the sum of the cubes of the roots in the function $f(x) = 2x^2 - 6x + 3$?
4. _____ What is the product of the eigenvalues of the following matrix: $\begin{bmatrix} 2 & -4 & 3 \\ -4 & 5 & 7 \\ 4 & 2 & -2 \end{bmatrix}$?
5. _____ What is the sum of the fifth hexagonal number and seventh pentagonal number?
6. _____ Find the remainder when 13^{32} is divided by 11.
7. _____ How many digits are in the expansion of 5^{37}?
8. _____ What is the volume of a regular tetrahedron with side length of 11?
9. _____ How many positive integers are relatively prime to and less than 693?
10. _____ What is the length of the segment that is parallel to the bases and divides a trapezoid into two equal areas given that the lengths of the bases are 13 and 21?
11. _____ What is the sum of the squares of the reciprocals of the roots of the function $f(x) = 4x^4 - 3x^3 + 7x^2 - 14$?
12. _____ How many petals are on the curve $r = \cos(\frac{7}{6}\theta)$?
13. _____ What is the maximum number of possible negative real roots in the function $f(x) = -9x^9 - 3x^7 + 6x^6 - 3x^5 - 3x^4 + 2x^2 - 5$?
14. _____ What is the product of the slopes of the asymptotes of the following conic: $-16y^2 - 36x + 9x^2 - 96y - 252 = 0$?
15. _____ How many holes does the following function have? $f(x) = \dfrac{(x-7)^2(x-3)^5(x-1)^9(x-\pi)^2(x-5)(x-11)^4}{(x-\pi)^2(x-3)^6(x-2)(x-1)(x-7)}$
16. _____ How many minutes are in 42 full days?
17. _____ What is the third term in the expansion of $(3-2x)^{-5}$?
18. _____ What is the sum of the positive integer factors of 1080?
19. _____ What is the sum of the coefficients of the expansion $(3x^2 + 5y^6 + 7z^10)^2$?
20. _____ What is the minimum of $f(x) = 3x^4 - 9x^2 + 14$?
21. _____ What is 16^3?
22. _____ What is $\cos(\frac{\pi}{2}) \times 1.5$?
23. _____ What is the value of $10 - 12 \times 14 + 16$?
24. _____ What is the sum of the reciprocals of the first four prime numbers?
25. _____ What is the sum of the first 10 positive odd integers?
26. _____ How many different ways can a group of 6 distinguishable children be arranged?
27. _____ One of the sides of a right triangle having all integer sides is 11. What is the hypotenuse?
28. _____ What is the degree measure of one internal angle of a 14 sided regular polygon, rounded to the nearest tenth?

29. _____ What is the sum of the 14th and 17th Fibonacci numbers, if the first Fibonacci number is 0?
30. _____ What is the sum of the positive prime factors of 1485.
31. _____ Simplify $\sqrt{8064}$ into simplest radical form.
32. _____ What is the product of the 8th and 9th triangle numbers?
33. _____ What is the LCM of 21, 19, and 14?
34. _____ Find the arithmetic mean of the following set of numbers: 12, 4, 6, 8, 24, 7, 4, 9, 3, 25, 14, 16
35. _____ What is $2018 * 2018$?
36. _____ In how many ways can the letters of the word "Rickards" be arranged?
37. _____ What is the value of $27 + 35$?
38. _____ How many times does the number 8 appear in at least one digit of the first 1000 positive integers?
39. _____ A depressed teenager sleeps 13 hours a day. How many hours does the teen sleep in a non leap year?
40. _____ What is the slope of the line going through the points $(-4, 13)$ and $(2, 15)$?